

SENCORE TR-139

TRANSISTOR TESTER



AT LAST -- An IN-CIRCUIT Transistor Tester That REALLY Works!

checks all transistors, diodes
and rectifiers out of circuit
too for accurate AC beta and
 I_{CBO} leakage.

TR139
ONLY
\$89.50

YOUR BEST ANSWER FOR SOLID STATE...

Servicing... Production Line Testing... Quality Control... Design...

Solid state circuits are now being used everywhere . . . TV, Hi-Fi, radios, phonographs, tape recorders, stereo, and now even color TV — and more coming along every day. The only way you can stay on top of the service problem is with a fast, efficient, in-circuit transistor tester.

Since most of this solid state equipment has the transistors soldered directly to the printed circuit board, it is no longer practical to check transistors the old-fashioned way — pulling each one to test or substitute for it. New, faster, more accurate trouble-shooting techniques are called for.

To meet the problem, Sencore has developed a new, modern, **in-circuit** transistor tester — the TR139 — that lets you check any transistor or diode in-circuit without disconnecting a single lead. Nothing could be simpler . . . or quicker!

OUT OF CIRCUIT TESTS . . . No need to remember two different test procedures for in-circuit and out of circuit testing, as the procedure is the same. The beta readings will, of course, be slightly more accurate when checked out of circuit. Transistors can be matched, sorted and selected, for specific required values of beta and I_{CBO} .

BETA MEASUREMENTS. Beta is the all-important gain factor of a transistor. The Sencore TR139 gives you the true AC beta reading on a large 6-inch meter. Just set the Cal knob and push a button. Actually measures the ratio of AC signal on the base of the transistor to that obtained on the collector.

I_{CBO} MEASUREMENTS. The TR139 also gives you the leakage current (I_{CBO}) of any transistor in microamps directly on the meter. This is highly important as many transistors have good beta but do not work in the circuit because the leakage current has changed or is too high.

DIODE TESTS. The NEW TR139 checks both rectifiers and diodes either in or out of the circuit. The in-circuit test gives a speedy "go or no go" indication. Out of circuit testing measures the actual front to back conduction in microamps.

COMPLETE PROTECTION. A special circuit in the TR139 protects even the most delicate transistors and diodes, even if the leads are accidentally hooked up to the wrong terminals of the transistor.

NO SET-UP BOOK. Just hook up any unknown transistor to the TR139. It will tell you beta and I_{CBO} without so much as glancing at a set-up book or transistor manual. Determine PNP or NPN types at the flick of a switch.

That's why the Sencore TR139 is the answer to servicing of today's complex transistorized equipment. Features compare to laboratory testers costing much more.

NO. 1 MANUFACTURER OF ELECTRONIC MAINTENANCE EQUIPMENT

SENCORE SM112B**VTVM/VOM
SERVICE MASTER**

**THE
2 IN 1
INSTRUMENT
THAT GIVES
YOU VTVM
OR VOM**

HP118 High Voltage Probe..... 7.95

In today's complex electronic servicing, you need both — a VTVM and a VOM. But you don't need two separate instruments — just **one** Sencore Service Master!

Designed to save you money, save your time and speed your service work, the new SM112B — third and most advanced generation of the famous Service Master — is a marvel of convenience, accuracy and professional quality, absolutely essential for color TV servicing as well as black and white.

STILL ONLY

\$79⁹⁵

MOST VERSATILE TEST INSTRUMENT YOU'LL USE ... ANYWHERE, ANY TIME

NO. 1 MANUFACTURER OF ELECTRONIC MAINTENANCE EQUIPMENT



FEATURES

- Just one function switch, one range switch and one probe provide all functions of VTVM and VOM.
- VTVM operates from 115v AC for precise bench or lab work; battery powered VOM gives you a portable 5000 ohms per volt meter for use where other power is not available, for instant readings without warm-up, and for current checks.
- Voltage, current and resistance in 33 ranges — for accurate, dependable measurements anywhere, any time.
- Lighted arrows on the VTVM scales automatically indicate the exact scale to read — no chance of error, no risk of reading the wrong scale. A Sencore exclusive.
- Large, easy-to-read 6-inch two-percent meter covers all measurements.
- All readings thru a single, permanent self-contained probe. High-voltage probe attaches to it for measuring up to 30,000 volts DC.
- Handsome new bench styling in tough, vinyl-clad steel case.
- Professional quality through and through . . .

SM112B SPECIFICATIONS

VTVM OPERATION

DC Volts

Ranges: 0 to 3, 10, 30, 100, 300, 1000 full scale.

Input Resistance: 11 megohms.

Accuracy: $\pm 3\%$ full scale.

AC Volts

Ranges: (RMS) 0 to 3, 10, 30, 100, 300, 1000 full scale.

Frequency Response: 30 cycles to 4.5MC on first four ranges.

Accuracy: $\pm 5\%$ full scale.

Peak-to-peak Ranges: 0 to 8.4PP, 28PP, 84PP, 280PP, 840PP, 2800PP.

Ohmmeter

Ranges: 0 to 1,000, 10,000, 100,000 ohms; 0 to 1, 10, 1,000 megohms.

VOM OPERATION

Current: 1 range 0 to 1 amp.

DC Volts

Ranges: 0 to 3, 10, 30, 100, 300, 1000.

Sensitivity: 5,000 ohms per volt.

Accuracy: $\pm 3\%$ full scale.

AC Volts

Ranges: 0 to 3, 10, 30, 100, 300, 1000.

Sensitivity: 500 ohms per volt.

Accuracy: $\pm 5\%$ full scale.

Ohmmeter

Ranges: 0 to 10,000 ohms; 0 to 1 megohm.

GENERAL

Meter: 6" 200 microamp $\pm 2\%$.

Multiplier Resistors: 1% precision type.

Tube: 1-12AU7; 1-6 BN8.

Battery: 1 - 1.5v "D" cell.

Cabinet: 9" $\times$ 7½" $\times$ 6" vinyl-clad steel, brushed chrome steel panel, carrying handle.

VTVM power, 115v AC.

VTVM Scale Lights: four, to indicate ohms, two voltage ranges and 3v AC scale.

See America's most complete line of professional test instruments — at your Distributor now.



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426 SOUTH WESTGATE DRIVE, ADDISON, ILLINOIS 60101

*the instrument with
endless uses ... the all new
improved completely solid state*

SENCORE FS134 FIELD STRENGTH METER

HERE ARE JUST A FEW OF THE MANY USES...



A. Distribution Systems



D. Transmission Lines



B. Antenna Installations



E. Antenna Comparisons



C. Color Insurance



F. Checking Generators



only
199.50
lowest price going

A. INSTALLING AND CHECKING OUT DISTRIBUTION SYSTEMS

Qualify for this multimillion dollar business in hotel, motel, and hospital installations.

B. INSTALLING UHF, VHF, AND FM ANTENNAS

Cut down installation time and pay for the FS134 in a short time on critical UHF as well as VHF and FM antennas.

C. COLOR INSURANCE

Be sure the signal is adequate on each channel for proper color TV operation.

D. CHECK TRANSMISSION LINES

For the first time read actual db loss in either 75 or 300 ohm transmission lines.

E. COMPARE ANTENNAS

For actual db gain; see which is best for each location, both VHF and UHF. Also excellent for

orienting "dishpans" for translator use at the high end of UHF band.

F. CHECK ANY GENERATOR OUTPUT

For correct frequency and output all the way up to a tenth of a volt RMS. What a time saver when you want to know if your generator is putting out.

PLUS: LOCALIZE NOISE AND INTERFERENCE

Find noise source fast; pick quiet locations for antenna installations or orient antenna away from noise when possible.

These are only a few uses of this UHF-FM-VHF accurately microvolt calibrated field strength meter. You can start paying for the FS134 tomorrow in the time saved today — if you see your Sencore distributor now. Why not pick up the phone and ask him to show you the new FS134?



QUESTIONS AND ANSWERS ON THE SENCORE FS134 FIELD STRENGTH METER

Q. I have installed antennas for years without a field strength meter. Do I really need one now?

A. If you plan to install only VHF antennas, you may be able to get by without using a field strength meter. However, if you plan to install antennas for color, FM stereo, or the more critical UHF band, you will need the FS134 to obtain the proper signal level and orientation of the antenna. Besides antenna installation, the FS134 can be used to actually compare different antennas for db gain, measure losses in the different types of lead-ins, install and balance out distribution systems, check your generators on the bench for frequency and output, and many more uses. The FS134 is one of the most versatile instruments that you can own.

Q. How does the Sencore FS134 compare to the Jerrold field strength meter?

A. The FS134 uses the Jerrold connector on the front panel for its 75 ohm coax input connector and uses the same industrial standard for its 0 db reference. The 0 db reference is merely a 1000 microvolt signal level across 75 ohms. The meter scale on the FS134 is calibrated in both microvolts and db. The readings from the FS134 are true values of db and microvolts and are not relative values as found on other instruments.

Q. Does the FS134 require additional plug-in units or accessories for measuring UHF frequencies?

A. No. The FS134 is the only field strength meter that covers the UHF band as well as the VHF and FM bands without the use of adaptors or accessories. The UHF tuner in the FS134 is a separate built-in unit to insure greater accuracy at these frequencies.

Q. Can I use the FS134 to measure the high level signal output of an antenna distribution amplifier?

A. Yes. The FS134 attenuator system of 0, 20, and 40 db (X1, X10, and X100) allow the measurement of signal levels from 30 microvolts to 3 volts RMS, enabling you to measure the signal level from the amplifier to the last tap-off in the system. The logarithmic scale of 30 to 30,000 microvolts allows for the installation and orientation of an antenna without the necessity of range switching.

Q. How can I tell if I have the FS134 tuned to the right signal?

A. The FS134 has a built-in audio system and speaker for monitoring and identifying an FM station or the sound carrier of a TV signal. The dial is calibrated directly in frequency as well as channel numbers for the TV bands. Tune in the signal, monitor the sound, and you can be sure that you have the right station.

Q. I noticed an AC cheater cord receptacle on the front panel. Is the FS134 AC operated?

A. No. The FS134 is powered by inexpensive, easy to get "C" cells. The current drain on the batteries is very low and provides long life. The use of batteries eliminates the possibility of shock hazard and the need for long messy extension cords. The cheater cord receptacle is used for the AC input for an optional rechargeable battery system that can be installed in the FS134 to be used as a portable field instrument as well as operated directly off the AC line for bench use. The rechargeable battery supply is overcharge proof.

FS134 SPECIFICATIONS

TUNING RANGE:

53 MC to 109 MC — TV Channels 2 to 6 and FM Band
173 MC to 218 MC — TV Channels 7 to 13
465 MC to 895 MC — TV Channels 14 to 83

SENSITIVITY:

53 MC to 109 MC — 30 Microvolts $\pm$ 3 db
173 MC to 218 MC — 30 Microvolts $\pm$ 3 db
465 MC to 895 MC — Microvolts $\pm$ 6 db

INPUT IMPEDANCE:

75 ohm for Coaxial cable through Jerrold connector
300 ohm with built-in matching transformer for twinlead

TEMPERATURE RANGE:

-5° to 105° Fahrenheit

SIZE:

$9\frac{1}{2}''$ x $10''$ x $5''$ — 9 lbs.

ATTENUATORS:

0 db (X1 for microvolts)
20 db (X10 for microvolts)
40 db (X100 for microvolts)

POWER REQUIREMENTS:

8 "C" cells for 12 volts supply
1 "C" cell for -1.5 volts bias supply

OPTIONAL ACCESSORIES:

39G15 Rechargeable battery supply. \$9.95



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